UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/760,964	01/16/2001	George H. Kerby	10002893-1	4352

7590 01/24/2006

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER	
DIVINE, LUCAS	
ART UNIT	**PAPER NUMBER**
2624	

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/760,964	KERBY, GEORGE H.	
	Examiner	Art Unit	
	Lucas Divine	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 7-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 7-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/23/05 has been entered.

Response to Amendment

2. Claims 1 – 5 and 7 – 20 are pending.

Response to Arguments

3. Applicant's arguments filed regarding claims 1 and 19 have been fully considered but they are not persuasive.

With respect to applicant's arguments on pages 6 and 7 that Amano does not teach the new limitation.

In reply, the system of Amano is a digital printing system. Thus, the system is run by a CPU (e.g. 12/103) which receives digital signals from the engine control unit/print unit interface (106, 16). In the time between then these signals arrive or are polled, the system will automatically stay with the previously read humidity value. Thus, the previously read/received humidity value acts as a default value if a new humidity value is not immediately available. The

sensor detecting humidity of Amano (col. 25 lines 36-52) updates anytime an abnormality. The system of Amano can update the processing/dither matrices during print operation (Fig. 7 steps S75,76, wherein at the end of each page, dither matrix change processing can occur). Further, col. 13 lines 1-30 teach that the dither matrix change processing can be updated whenever there is a change in the status. Thus, the CPU only receives status updates at the time it occurs and not continuously as in analog. During the time between status changes, then, the system will be using the previous [default] value. If the humidity value is not available during the print operation it means that no status change has occurred and thus the previous [default] value will continue to be used. Thus, the rejection is maintained.

4. Applicant's arguments with respect to claim 10 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

5. Claim 10 is objected to because of the following informalities: the new limitation includes that 'if the humidity value has changed' after [paraphrased] A, B, and C. As claimed, this means that the criteria for A, B, and C all need to have been met before the printer components will reconfigure. Examiner notes that the specification, as cited on page 7 of remarks says A or B or C. Appropriate correction is required. Thus, Examiner will interpret as 'if the humidity value has changed' after at least one of A, B, and C.

6. Claim 19 is objected to because of the following informalities: Examiner notes that the claim claims 'A toner cartridge comprising: ... printer components that are configured to use a

default value if the humidity value is not available during operation'. This suggests that applicant has disclosed a toner cartridge when in Fig. 1, applicant clearly teaches the printer components are not a part of the toner cartridge. Appropriate correction is required. Examiner suggests possibly changing the prelude to be more accurate or to amend the claim some other way to clear up confusion.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1 – 4, 8, 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amano et al. (US 6100996) in view of Hirst (US 5655174) and Nakano (US 5913097).

Regarding claim 1, Amano teaches **a printer system** 1000 in Figs. 1 and 2 **comprising**:

a first communication interface configured to receive a humidity value. Fig 16 shows a communication interface 106 accepting sensor information from the sensor interface 410 and passing it through to the print controller to the printing system functionally shown in Fig. 2. This sensor value can be a humidity value as taught in col. 25 lines 46-49. Another example is interface 15 of Fig. 2.

and printer components configured to electronically control a printing operation based on the humidity value. The electronic printer components of printer 1000 (including

electronic printer controller 103) detect the humidity sensor information as taught in col. 12 lines 37-40 wherein the status information is detected from the print unit 17 which includes the sensor 1020. The printer components then configure the printing operations for optimum printing based on the humidity status reading from the print unit as taught in col. 25 lines 46-51. This optimum printing based on the humidity status can be further seen in Fig. 3 where the status information of the print unit is detected and printing is optimally adjusted.

wherein the printer components are configured to use a default value if the humidity value is not available during the print operation. The system is run by a CPU (e.g. 12/103) which receives digital signals from the engine control unit/print unit interface (106, 16). In the time between then these signals arrive, the system will automatically stay with the previously read humidity value. Thus, the previously read/received humidity value acts as a default value if a new humidity value is not immediately available. The sensor detecting humidity of Amano (col. 25 lines 36-52) updates anytime an abnormality. The system of Amano can update the processing/dither matrices during print operation (Fig. 7 steps S75,76, wherein at the end of each page, dither matrix change processing can occur). Further, col. 13 lines 1-30 teach that the dither matrix change processing can be updated whenever there is a change in the status. Thus, the CPU only receives status updates at the time it occurs and not continuously as in analog. If the humidity value is not available during the print operation it means that no status change has occurred and thus the previous [default] value will continue to be used.

While Amano teaches using a humidity sensor to monitor system status, he does not teach a humidity sensor to toner cartridge relationship to control system operation.

Hirst teaches a humidity sensor 46 for monitoring system changes and controlling system operation. Further is taught a humidity sensor to toner relationship as seen from Fig. 5. The humidity sensor 46 is located near the toner supply 48 to detect a toner area humidity value as taught in col. 4 lines 41-67. It would have been obvious to one of ordinary skill in the art to place the humidity sensor of Amano near the toner as taught in Hirst in order to control system operation. This would produce a more accurate system status reading and provide a more proper printed output improving thus on a stated objective of Amano in col. 4 line 64.

However, the combination of Amano and Hirst does not teach specifically placing a sensor status monitoring on the toner cartridge.

Nakano teaches specifically placing a sensor on the toner cartridge for status monitoring. Fig. 2 shows a sensor 55 physically attached to the toner cartridge 30 discussed in col. 5 lines 62-64. Thus, sending sensed information **from the toner cartridge.**

It would have further been obvious to one of ordinary skill in the art to place the sensor for monitoring system status of Amano and Hirst on the toner cartridge as taught in Nakano. The motivations for doing so would have been to place the sensor closer to the toner to further improve on the optimum printing objective of Amano and to provide a toner cartridge and printing system with a more economical packaging setup and manufacturing setup because of the combination of two devices, humidity sensor and toner cartridge. The economical reengineering of parts is suggested and encouraged by Hirst in col. 6 lines 23-29.

Regarding claim 2, which depends from claim 1, the **humidity sensor** of Amano would have been known to one of ordinary skill in the art to be **configured to detect a humidity level and generate the humidity value to correspond with the humidity level.** Humidity sensors

used in digital printing systems were known to detect humidity levels of an area and provide a humidity value based on the detected humidity level and this is suggested in the printing system of Amano receiving a humidity value from the sensor.

Amano further teaches **a second communication interface configured to transfer the humidity value from the humidity sensor to the first communication interface.** The sensor interface 410 is configured to take sensor information and transfer it to the first communication interface 106 as shown in Fig. 15. Another example of a second interface is 16 in Fig. 2.

Regarding claim 3, which depends from claim 1, Amano further teaches **configuring the printer components to configure a dither matrix based on the humidity value.** The printer components of printer 1000 detect the humidity sensor information as taught in col. 12 lines 37-40 wherein the status information is detected from the print unit 17 which includes the sensor 1020. The printer components then configure the printing operations for optimum printing based on the humidity status reading from the print unit as taught in col. 25 lines 46-51. This optimum printing based on the humidity status can be further seen in Fig. 3 where the status information of the print unit is detected and a dither matrix is configured to properly output the print information. Col. 15 lines 8-9 of Amano further teach a dither matrix change program inside the printer components that configure the dither matrix as shown in step S34 of Fig. 3.

Regarding claim 4, which depends from claim 3 as it depends from claim 2, Amano further teaches that **the printer components are configured to select the dither matrix from a plurality of dither matrices based on the humidity value.** Figs. 4 and 6 show examples of the plurality of dither matrices selectable based on the inputted status information of Fig. 3 and col. 5

line 3 discusses using a plurality of dither matrices (processing means) for processing an input image based on a humidity value (input rule).

Regarding claim 8, which depends from claim 1, Amano teaches all of the limitations of claim 8. The limitation subject matter is the same as the limitation subject matter of claim 1 except the limitation listed below, and is rejected for the reasons stated in the rejection of claim 1. Further, the laser printing system in Fig. 1 of Amano would have been known to one of ordinary skill in the art to work in **real-time.** The electronic laser printer of Amano would have been known to one of ordinary skill in the art update printer information at the same rate as it received it, wherein rapid rate of information processing is one characteristic of laser printing systems. This could have been further seen in Fig. 3 where there are no delays between the status reception and the dither matrix update. It also would have been known to one of ordinary skill in the art for the humidity sensor to provide humidity data in **real-time** in order to provide the real-time laser printing system with accurate system information.

Regarding claim 9, which depends from claim 1, Amano, Hirst, and Nakano teach the parent limitations of claim 1 as discussed in the rejection of claim 1. Amano further teaches a printing system **configured to produce monochrome copies.** Fig. 14 shows a black toner cartridge 220Bk that enables the printing system 1000 to produce monochrome copies (print outputs).

Regarding claim 19, Amano in view of Hirst and Nakano teaches all of the limitations of claim 19 as recited in claim 2 except for the limitation below. Therefore, the limitations that are the same are rejected for the same reasons stated in the rejection of claim 2.

Amano further teaches the **toner cartridge** 220Bk comprising **toner for a printing system** in col. 18 lines 40-41, wherein toner is stored in the toner cartridges.

8. Claims 5, 7, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amano, Hirst, and Nakano as applied to claims 1, 3, and 19 above, and further in view of Allen et al. (US 6268094).

Regarding claim 5, which depends from claim 3, Amano further teaches the **printer components are configured to scale the dither matrix** based on humidity inputs in col. 13 lines 58-65, wherein the dither matrix is scaled based on a humidity value (status input).

While the combination teaches systems for monitoring print system information, they do not teach **the relationship of a toner humidity level to a response curve to predict toner consumption and the resultant toner level.**

Allen teaches **the relationship of a toner humidity level to a response curve to predict toner consumption and the resultant toner level** in a system for monitoring ambient system information including the sensing of humidity 33. Fig. 2 ref. no. 33 and col. 5 lines 9-16, teach the preferred method of evaluating a humidity value is by using a response curve. It would have been obvious to one of ordinary skill in the art to apply the response curve of Allen to the dither matrix selection of Amano. The motivation for doing so would have been to provide quicker dither matrix selection by using the quick lookup of system status predictions, such as toner consumption values, on the response curve as opposed to the more computationally intense humidity status analysis and dither matrix calculations shown in the analysis process in Fig. 5 of Amano.

Regarding claim 7, which depends from claim 1, by using such a response curve as taught by Allen, this would enable **the printer components to be configured to determine a humidity range corresponding to the humidity value**. When the humidity value is placed on the response curve of Allen, the printer components are able to determine a range based on the curve near the humidity value.

Regarding claim 20, which depends from claim 19, the structural elements of claim 7 as it depends from the rejected claim 1 perform the steps of method claim 20. Therefore, claim 20 is rejected for the reasons stated in the rejection of claim 7.

9. Claims 10 – 13, 15, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amano, Hirst, and Nakano in view of Maruta et al. (US 5237369).

Regarding claim 10, Amano teaches **a method of operating a printer system, the method comprising:**

receiving a humidity value (col. 25 lines 45-52); **and**

controlling printing operation based on the humidity value (e.g. Fig. 3, wherein when status changes, the dither matrices controlling the printer operation can be changed), **and**

reconfiguring printer components if the humidity value has changed (changes in the dither matrix [e.g. S34] alter how the job is printed, thus altering the components and physical parts of the printer to print differently).

While Amano teaches using a humidity sensor to monitor system status, Amano does not specifically teach a humidity sensor relating to toner or from the actual cartridge.

Hirst teaches a humidity sensor 46 for monitoring system changes and controlling system operation. Further is taught a humidity sensor to toner relationship as seen from Fig. 5. The humidity sensor 46 is located near the toner supply 48 to detect a toner area humidity value as taught in col. 4 lines 41-67.

It would have been obvious to one of ordinary skill in the art to place the humidity sensor of Amano near the toner as taught in Hirst in order to control system operation. This would produce a more accurate system status reading and provide a more proper printed output improving thus on a stated objective of Amano in col. 4 line 64.

The combination of Amano and Hirst does not teach specifically placing a sensor status monitoring on the toner cartridge itself.

Nakano teaches specifically placing a sensor on the toner cartridge for status monitoring. Fig. 2 shows a sensor 55 physically attached to the toner cartridge 30 discussed in col. 5 lines 62-64. Thus, sending sensed information **from the toner cartridge.**

It would have further been obvious to one of ordinary skill in the art to place the sensor for monitoring system status of Amano and Hirst on the toner cartridge as taught in Nakano. The motivations for doing so would have been to place the sensor closer to the toner to further improve on the optimum printing objective of Amano and to provide a toner cartridge and printing system with a more economical packaging setup and manufacturing setup because of the combination of two devices, humidity sensor and toner cartridge. The economical reengineering of parts is suggested and encouraged by Hirst in col. 6 lines 23-29.

Amano, Nakano, and Hirst do not specifically teach the humidity value changing **after a set time period, a set number of copies, and a set number of power cycles.**

Maruta teaches (Fig. 9, col. 9 lines 9-41) that humidity over time and number of copies can change enough to affect toner concentration, and thus checking at certain times such as T1, T2, T3, T4, T5 are advantageous (e.g. col. 9 line 19, wherein developer can be replaced by checking at time 1 to see if humidity has changed enough to affect toner concentration). Also checking at T3, where the minimum toner concentration for adequate copying might be at would allow the system of Amano, Hirst and Nakano to correctly adjust the printing. Thus, it would have been obvious to one of ordinary skill to reconfigure the printer components if the humidity values changed after a predetermined time and/or a set number of copies, which both affect humidity and toner concentration. This would provide for a more accurate printing by being able to know and predict the toner concentrations in selecting dither matrices.

Regarding claim 11, which depends from claim 10, Amano teaches these method steps as performed by apparatus elements as discussed in claim 2. Therefore, claim 11 is rejected for reasons set forth in apparatus claim 2.

Regarding claim 12, which depends from claim 10, Amano teaches these method steps as performed by apparatus elements as discussed in claim 3. Therefore, claim 12 is rejected for reasons set forth in apparatus claim 3.

Regarding claim 13, which depends from claim 12, Amano teaches these method steps as performed by apparatus elements as discussed in claim 4. Therefore, claim 13 is rejected for reasons set forth in apparatus claim 4.

Regarding claim 15, which depends from claim 10, Amano teaches these method steps as performed by apparatus elements as discussed in claim 1. Therefore, claim 15 is rejected for reasons set forth in apparatus claim 1.

Regarding claim 17, which depends from claim 10, Amano teaches these method steps as performed by apparatus elements as discussed in claim 8. Therefore, claim 17 is rejected for reasons set forth in apparatus claim 8.

Regarding claim 18, which depends from claim 10, Amano teaches these method steps as performed by apparatus elements as discussed in claim 9. Therefore, claim 18 is rejected for reasons set forth in apparatus claim 9.

10. Claims 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amano, Hirst, Nakano, and Maruta as applied to claims 10 and 12 above, and further in view of Allen et al..

Regarding claim 14, which depends from claim 12, Amano further teaches the printer components are configured to scale the dither matrix based on humidity inputs in col. 13 lines 58-65, wherein the dither matrix is scaled based on a humidity value (status input).

While the combination teaches systems for monitoring print system information, they do not teach the relationship of a toner humidity level to a response curve to predict toner consumption and the resultant toner level.

Allen teaches the relationship of a toner humidity level to a response curve to predict toner consumption and the resultant toner level in a system for monitoring ambient system information including the sensing of humidity 33. Fig. 2 ref. no. 33 and col. 5 lines 9-16, teach the preferred method of evaluating a humidity value is by using a response curve. It would have been obvious to one of ordinary skill in the art to apply the response curve of Allen to the dither matrix selection of Amano. The motivation for doing so would have been to provide quicker

dither matrix selection by using the quick lookup of system status predictions, such as toner consumption values, on the response curve as opposed to the more computationally intense humidity status analysis and dither matrix calculations shown in the analysis process in Fig. 5 of Amano.

Regarding claim 16, which depends from claim 10, by using such a response curve as taught by Allen, this would enable the printer components to be configured to determine a humidity range corresponding to the humidity value. When the humidity value is placed on the response curve of Allen, the printer components are able to determine a range based on the curve near the humidity value.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hamamichi et al. (US 5539500) teaches image forming apparatus with humidity controlling device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucas Divine whose telephone number is 571-272-7432. The examiner can normally be reached on Monday - Friday, 7:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lucas Divine
Examiner
Art Unit 2624

ljd

KING Y. POON
PRIMARY EXAMINER